OPERATIONS MANUAL
AND
PARTS BOOK

Walk-Behind Trowels

allen®
ENGINEERING
CORPORATION
CONCRETE IDEAS TO BUILD ON®

Walk Behind Trowel

OPERATIONS MANUAL
ASSEMBLY INSTRUCTIONS
PARTS BOOK

THIS MANUAL COVERS WALKBEHIND TROWEL(S) BELOW

430 EDGING WALKER SERIES

037247
037247-ADJ

436 EDGING WALKER SERIES

039213
039213-ADJ

436 SERIES

034103
034137
034136
034104
032031
032031-ADJ
034510-ADJ
032032
032032-ADJ
032028
032029
032025
032025-ADJ
035936
033582
034546

442 SERIES

038666-ADJ
040373-ADJ

VALUE SERIES

042193
042194
039987
042195
042196
042197
040816
042198

446 SERIES

032039
032039-ADJ
032040
032040-ADJ
032037
032038
032050
032052-ADJ
032049
032051

446SD SERIES

033374
033370
032065
032055
032791
032059
032054
032054-ADJ
032053
042039-ADJ
042040
042045-ADJ
042042

446SD SFC SERIES

040975
040976
040977
040978
040979
040980
040981
040982
042042
042048
042050
040981-ADJ
042053-ADJ

446 SHD SERIES

043203
043204
043205
043206

PRINTED 1/03

Allen Engineering's Razorback Walk Behind Trowels are covered under one or more of the following patent numbers: **U.S. Design Patents:** 413,127; 416,564. **U.S. Utility Patents:** 4,577,993; 6,019,545. **Canadian Patents:** 1,250,760. With Other Patents Pending.

LIMITED WARRANTY

Allen Engineering Corporation warrants its products to be free of defects in material or workmanship for the following periods:

A. All New Machines and Part	**6 Months**
B. All New Gear Boxes	**2 Years**
C. All Factory Reconditioned Gear Boxes	**1 Year**

Warranty period begins on first day of use by End User. This first day of use is established by a completed warranty card or a Bill of Sale to the end user. All warranty is based on the following limited warranty terms and conditions.

1. Allen Engineering Corporation's obligation and liability under this warranty is limited to repairing or replacing parts if, after Allen's inspection, it is determined to be a defect in material or workmanship. Allen Engineering Corporation reserves the choice to repair or replace.
2. If Allen Engineering Corporation chooses to replace the part, it will be at no cost to the customer and will be made available to the Distributor/Dealer from whom the customer purchased the product.
3. Replacement or repair parts, installed in the product, are warranted only for the remainder of warranty period of the product as though they were the original parts.
4. Allen Engineering Corporation's warranty applies only to the products that are manufactured by Allen Engineering and does not cover component parts such as engines and clutches. Allen Engineering Corporation DOES NOT warranty clutches. Engine warranty claims should be made directly to an authorized factory service center for the particular engine make.
5. Allen Engineering Corporation's warranty does not cover the normal maintenance of products or its components (such as engine tune-ups and oil changes). The warranty also does not cover normal wear and tear items (such as belts and consumables).
6. Allen Engineering Corporation's warranty will be void if it is determined that the defect resulted from operator abuse, failure to perform normal maintenance on the product, modification to product, alterations or repairs made to the product without the written approval of Allen Engineering Corporation. Allen Engineering Corporation specifically excludes from warranty any damage to any trowels resulting from an impact to the rotors. Allen Engineering Corporation also excludes from warranty any failure of clutches on any engine driven piece of equipment.
7. If a new gearbox has a factory defect within the first year of use, Allen Engineering Corporation will either repair the gearbox or replace it with a new gearbox. If a new gearbox has a factory defect in the second year of use, Allen Engineering Corporation will either repair it or replace it with a factory reconditioned gear box. Impact damage is NOT covered under the gear box warranty.
8. Allen Engineering Corporation will pay shop labor repair on warranty at the Allen Engineering Shop Labor Rate in existence on the date of the warranty claim. An Allen Engineering Labor Chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
9. Allen Engineering Corporation will pay freight on warranty replacement parts at Worldwide standard ground rates. No warranty replacement parts will be shipped air freight at the expense of Allen Engineering Corporation. Allen Engineering only pays outbound freight charges when sending warranty replacement parts to the customer VIA ground service. Allen Engineering does not pay any inbound freight, however, if Allen Engineering determines this to be warranty defect only then will Allen Engineering reimburse the customer for inbound freight at standard ground rates.
10. Allen Engineering Corporation's warranty policy WILL NOT COVER the following; taxes, shop supplies, environmental surcharges, air freight, travel time, loss of rental revenue, or any other charges whatsoever or any liabilities for direct, incidental, or consequential damage or delay.
11. **Allen Engineering Corporation makes no other warranty, expressed or implied. This limited warranty is in lieu of the warranty of merchantability and fitness. There are no other warranties that extend beyond the description on this document.**
12. No Allen Engineering Corporation employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Allen Engineering Corporation.

THE INFORMATION CONTAINED IN THIS MANUAL WAS BASED ON MACHINES IN PRODUCTION AT THE TIME OF PUBLICATION. ALLEN ENGINEERING RESERVES THE RIGHT TO CHANGE ANY PORTION OF THIS MANUAL WITHOUT NOTICE.

Information Contained in this Manual:

This manual provides information and procedures to safely operate and maintain the Allen Engineering series 430, 436, 442, 446, 446SD, and 446SD SFC ***Razorback® Walkers***.

For your own safety and protection from personal injury, carefully read, understand and observe the safety instructions described in this manual.

Always operate and maintain this machine in accordance with the instructions described in this manual. A well maintained piece of equipment will provide many years of trouble free operation.

This manual is divided into the sections listed below:

1A OPERATIONS | **2A ASSEMBLY** | **3A PARTS**

Ordering Parts

This manual contains an illustrated parts list for help in ordering replacement parts for your machine . Follow the instructions listed below when ordering parts to ensure prompt and accurate delivery.

1. On all orders for service parts include the SERIAL NUMBER and MODEL NUMBER of machine. Shipment will be delayed if this information is not included.

2. Include correct description and part number from parts section.

3. State exact shipping instructions including preferred routing and complete destination address.

4. **DO NOT** return parts to Allen Engineering without first receiving written authorization from Allen Engineering Corporation. All authorized returns must be shipped prepaid.

Keep this manual or a copy of it with the machine. If you lose this manual or need an additional copy, please contact your Allen distributor or Allen Engineering at 800-643-0095 or 870-236-7751.

TO ORDER ADDITIONAL COPIES OF THIS MANUAL, REQUEST PART # 039647

Allen Engineering Corporation
P.O. Box 819
Paragould, AR 72451-0819 USA

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1A OPERATIONS

Identification Plate

An identification plate listing the MODEL, NAME, and SERIAL NUMBER is attached to each unit and is located on the forward side of the engine mounting plate(SEE BELOW). This plate should not be removed. Please record the information found on this page below so it will be available should the identification plate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model and serial number of the unit.

Model Name Explanation:

446 8HO POS FIN STD ADJ

Handle Option
Short = SRT
Long = LNG
Height Adjustable = ADJ

Speed Option
Standard Speed = STD
High Speed = HI
Slow Speed = LO

Blade Option
Finish = FIN
Combination = COM

Pitch Option
Fine Pitch = STD
Positive Pitch = POS

Engine Type

Honda
5.5hp GX160
8.0hp GX240
11 hp GX340
13 hp GX390

Kawasaki
5.5hp FE170
9.0hp FE290
11 hp FE350

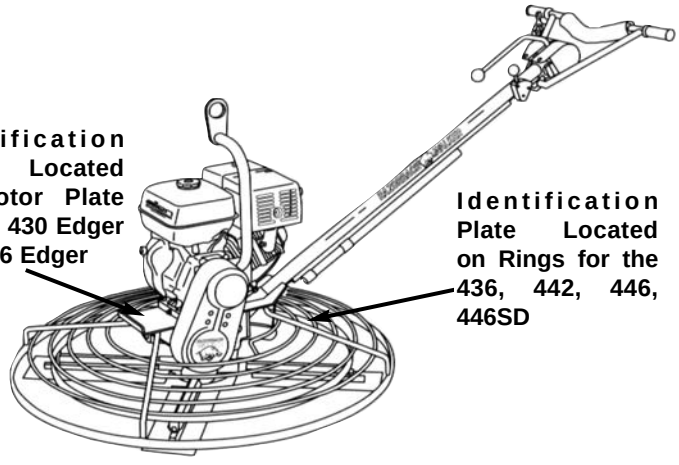
Size of Rotor
430
436
442
446
446SD

Serial Number

The serial number found on the identification plate is a six digit number. The serial number identifies your machine and will ensure that you receive the correct replacement parts.

436 12 02 002

- 002 — Production Sequence
- 02 — Year of Production
- 12 — Month of Production
- 436 — Rotor Size



Identification Plate Located on Motor Plate for the 430 Edger and 436 Edger

Identification Plate Located on Rings for the 436, 442, 446, 446SD

Fill in for Future Reference
Model Number:
Serial Number:
Date Purchased:
Purchased From:

IMPORTANT REMINDER

Fill out your Allen Engineering Corp. warranty card and place it in the mail within 24 hours of delivery.

Complete other warranty requirements as specified by the engine manufacturer in their instructions attached to the engine.

Your engine is not manufactured by Allen Engineering Corp., and therefore is not covered under our warranty.

Your engine manufacturer should be contacted if you wish to purchase a parts manual or a repair manual for your engine.

Refer to the enclosed owners manual on the engine for complete Operation & Maintenance instructions.

Your Distributor

Your distributor has Allen trained mechanics and original Allen replacement parts. Always contact the Allen distributor who sold you this machine for Allen certified repairs and replacement parts.

Place distributor information here for future reference.

DISTRIBUTOR NAME:_____ **PHONE NUMBER:**_____
ADDRESS:_____
CITY:_____ **STATE:**_____ **ZIP:**_____
SALESMAN:_____
ADDITIONAL INFORMATION:_____

1A OPERATIONS

Operating Information
430, 436, 442, 446, 446SD, 446SD SFC

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This machine was built with user safety in mind, however, it can present hazards if improperly operated and serviced. Follow operating instructions carefully!

If you have questions about operating or servicing this equipment, please contact your Allen distributor or Allen Engineering Customer Service at 800-643-0095 or 870-236-7751.

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1.1 Safety Notes

This manual contains NOTES, CAUTIONS, and WARNINGS which must be followed to reduce the possibility of improper service, damage to the equipment, or personal injury. Read and follow all NOTES, CAUTIONS and WARNINGS included in instructions.

NOTE Contains additional information important to a procedure

CAUTION Provides information important to prevent errors which could damage machine or components

WARNING Warns of conditions or practices which could lead to personal injury or death

1.2 Laws Pertaining to Spark Arresters

Notice: Some states require that in certain locations spark arresters be used on internal combustion engines. A spark arrester is a device designed to prevent the discharge of sparks or flames from the engine exhaust. It is often required when operating equipment on forest ed land to reduce the risk of forest fires. Consult the engine distributor or local authorities and make sure that you comply with regulations regarding spark arresters.

1.3 Operating Safety

SAFETY PRECAUTION

Familiarity and proper training are required for the safe operation of this equipment! Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions contained in both this manual and the engine manual and familiarize yourself with the location and proper use of all the controls.

1. Read operating and safety instructions before using the ***Razorback® Walker*** and operate the machine in accordance with the manufacturer's instructions.
2. Inspect your ***Razorback® Walker*** for damage or tampering that can sometimes occur during shipping. If damage is found, file a claim with your carrier immediately. Mark freight bill of lading as “damaged shipment”.
3. **Do not** operate your ***Razorback® Walker*** if any guards have been removed or if the "Safety Switch" is not operational.
5. Only trained personnel should be allowed to operate your ***Razorback® Walker***.
6. No foreign objects such as buckets, tools, or materials should ever be attached or allowed to ride on the trowel during operations.
7. **Do not** attempt to fill fuel tank or oil sump while engine is running. Allow engine to cool 5 minutes before refueling.
8. Never attempt to operate the trowel on steeply inclined surfaces.
9. Do not use over-the-counter hardware to replace manufacturer's hardware.
10. **HEALTH HAZARD:** When operating machines with gas engines in confined areas, the fumes **MUST** be ventilated!
11. Always wear safety goggles and gloves when operating the ***Razorback® Walker***.

1.4 Service Safety

Poorly maintained equipment can become a safety hazard! In order for the equipment to operate safely and properly over a long period of time, periodic maintenance and occasional repairs are necessary.

Warning

DO NOT attempt to clean or service machine while it is running. Rotating parts can cause severe injury.

DO NOT crank a flooded engine with the spark plug removed on gasoline-powered engines. Fuel trapped in the cylinder will squirt out of the spark plug hole.

DO NOT test for spark on gasoline-powered engines if engine is flooded or the smell of gasoline is present. A stray spark could ignite fumes.

DO NOT use gasoline or other types of fuels or flammable solvents to clean parts, especially in enclosed areas. Fumes from fuels and solvents can become explosive.

ALWAYS operate machine with all safety devices and guards in place and in working order.

ALWAYS keep area around muffler free of debris such as leaves, paper, cartons, etc. A hot muffler could ignite them, starting a fire.

ALWAYS replace worn or damaged components with spare parts designed and recommended by Allen Engineering.

ALWAYS disconnect spark plug on machines equipped with gasoline engines before servicing to avoid accidental start up.

1.5 Technical Data
Honda Engines

Engine Make and Model		Honda 4.0 GX120	Honda 5.5 GX160	Honda 8.0 GX240	Honda 11 GX340	Honda 13 GX390
Rated Power	hp (kw)	4.0 (2.9)	5.5 (4.1)	8.0 (5.7)	11 (8.2)	13 (9.7)
Piston Displacement	cu. in. (cc)	7.2 (118)	9.9 (162)	15 (246)	21 (344)	23.7 (389)
Spark Plug	Type	BPR6ES(NKG)	SAME	SAME	SAME	SAME
Electrode Gap	in. (mm)	.029 (.75)	SAME	SAME	SAME	SAME
Operating Speed	RPM	3800	SAME	SAME	SAME	SAME
Fuel Capacity	gal. (L)	.95 (2.5)	.95 (2.5)	1.6 (6.0)	1.6 (6.0)	1.72 (6.5)
Fuel Consumption	lb/hph(g/kwh)	.50 (310)	.50 (310)	.51 (310)	.51 (310)	.51 (310)
Running Time	Hours	1.9	1.9	3.13	3.33	3.36
Centrifugal Clutch	Type	MECH RAMP	SAME	SAME	SAME	SAME
Low Oil Shutdown Alert		YES	YES	YES	YES	YES
Engine Oil Capacity	US qt (L)	.63 (.6)	.63 (.6)	1.16 (1.1)	1.16 (1.1)	1.16 (1.1)
Engine Lubrication	Oil Grade	SAE 10W30	SAME	SAME	SAME	SAME
Operation Weight	lbs. (kg)	28 (13)	31 (15)	55 (25)	68 (31)	68 (31)

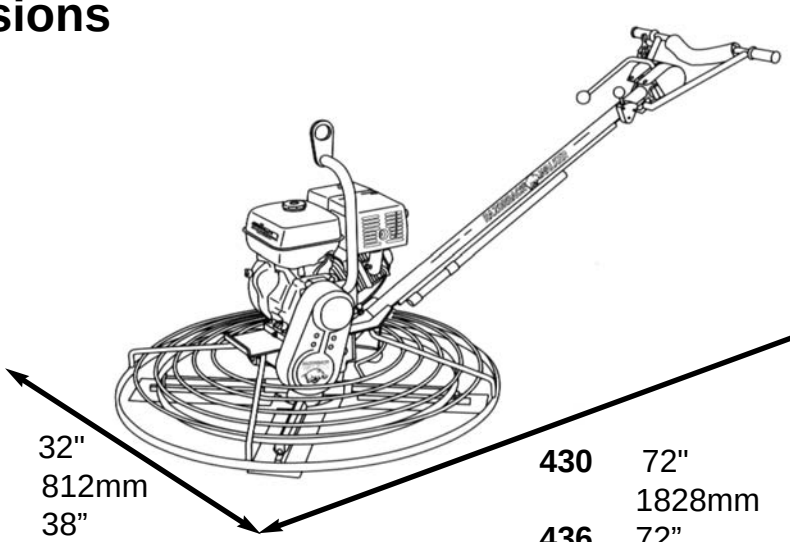
1.5 Technical Data
Kawasaki Engines

Engine Make and Model		Kaw. 4.0 FE120	Kaw. 5.5 FE170	Kaw. 9.0 FE290	Kaw. 11.0 FE350
Rated Power	hp (kw)	4.0 (2.8)	5.5 (4.0)	9.0 (6.7)	11.1 (8.3)
Piston Displacement	cu. in. (cc)	7.5 (123)	10.4 (171)	17.5 (287)	21.4 (351)
Spark Plug	Type	BPR6ES(NKG)	SAME	SAME	SAME
Electrode Gap	in. (mm)	.029 (.75)	SAME	SAME	SAME
Operating Speed	RPM	3800	SAME	SAME	SAME
Fuel Capacity	gal. (L)	.95 (2.5)	.95 (2.5)	1.6 (6.0)	1.6 (6.0)
Fuel Consumption	lb/hph(g/kwh)	.50 (310)	.50 (310)	.51 (310)	.51 (310)
Running Time	Hours	1.9	1.9	3.13	3.33
Centrifugal Clutch	Type	MECH RAMP	SAME	SAME	SAME
Low Oil Shutdown Alert		YES	YES	YES	YES
Engine Oil Capacity	US qt (L)	.63 (.6)	.63 (.6)	1.16 (1.1)	1.16 (1.1)
Engine Lubrication	Oil Grade	SAE 10W30	SAME	SAME	SAME
Operation Weight	lbs. (kg)	28 (13)	31 (15)	55 (25)	68 (31)

1A OPERATIONS

TROWEL		430 EDGER	436 EDGER	436	442	446	446SD
Length	in (mm)	67.5 (1715)	80 (2032)	72 (1828)	78 (1981)	78 (1981)	78 (1981)
Width	in (mm)	31.5 (800)	36.5 (927)	38 (965)	44 (1118)	48 (1219)	48 (1219)
Operating Weight	lbs (kg)	185 (84)	226 (102)	230 (104)	235 (106)	238 (108)	274 (124)
Troweling Width	in (mm)	31.5 (800)	36.5 (927)	36 (914)	42 (1069)	46 (1168)	46 (1168)
Rotor Speed	RPM	118	118	118	118	118	118
Pitch Range	Deg	0-20	0-20	0-20	0-20	0-20	0-20
Gear Box		Standard	Standard	Standard	Standard	Standard	Standard
Safety Switch	Handle Mount	Yes	Yes	Yes	Yes	Yes	Yes
*Gear Box Lub.	25 oz	Mobil Synthetic	Mobil Synthetic	Mobil Synthetic	Mobil Synthetic	Mobil Synthetic	Mobil Synthetic

1.6 Dimensions



430 36" 914mm
436 36” 914mm
442 39” 991mm
446 39” 991mm

430 32" 812mm
436 38” 965mm
442 44” 1118mm
446 48” 1219mm

430 72" 1828mm
436 72” 1828mm
442 78” 1981mm
446 78” 1981mm

1.7 Description

The ***Razorback*® *Walker*** is a modern high production machine. Finishing rate will vary depending on operator skill and job conditions. The trowel has four finishing blades. The standard duty gearbox is designed to provide exceptional performance low maintenance and trouble free use under the worst conditions. All ***Razorback*® *Walkers*** are equipped with a safety shutdown switch and a low oil shut-down alert for added job safety and engine protection. Operating time between fuel refills is approximately 2-1/2 to 3 hours with rotor speeds between 80 and 120 rpm. ***Razorback*® *Walkers*** are the most technically advanced trowels on the market today. With proper maintenance and use your trowel will provide you with exceptional service.

1.8 Before Starting

Before starting trowel check the following:

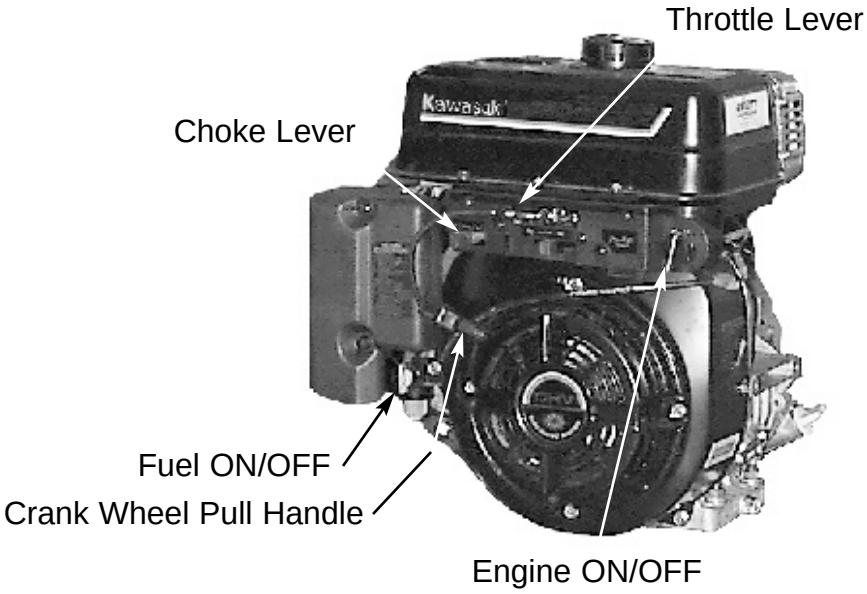
*Oil level in engine

*Oil level in trowel gear box

*Fuel level

*Condition of air filter

*Condition of trowel arms and blades

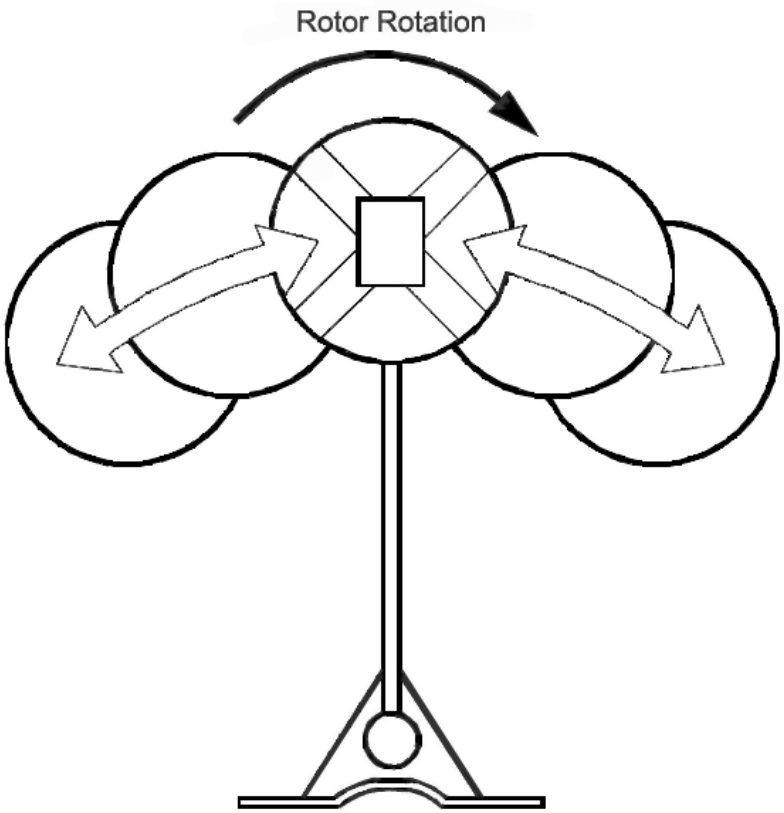


1.9 Starting

Before starting the operator must know the location of all the controls.

Move the **choke lever** to the closed position to start a cold engine. The choke may not be needed if the engine is warm or the air temperature is hot. In this case keep the choke lever open. Pull **crank wheel pull handle** until engine starts.

1.10 Steering



Push down on the handle to move the rotor assembly to the right.

Pull up on the handle assembly to move the rotor assembly to the left.

1.11 Pitch Adjustment

When changing or setting the pitch of the machine be sure that the machine is at a complete stop. On machines equipped with standard pitch, turn the pitch control knob clockwise to increase the pitch and turn it counter-clockwise to decrease the pitch. On machines equipped with positive pitch pull the pitch control handle up to increase the pitch and push the handle down to decrease the pitch.

1.12 Periodic Maintenance Schedule

The chart below lists basic engine maintenance. Refer to engine manufacturer's Operation Manual for additional information on engine maintenance. A copy of the engine Operator's Manual was supplied with the machine when it was shipped.

	DAILY	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 300 HOURS
GREASE TROWEL ARMS	√			
CHECK OIL LEVEL IN GEARBOX	√			
CHECK FUEL FILTER	√			
INSPECT AIR FILTERS - REPLACE AS NEEDED	√			
CHECK AND TIGHTEN EXTERNAL HARDWARE	√			
CHECK AND ADJUST DRIVE BELTS		√		
CHANGE ENGINE OIL			√	
REPLACE FUEL FILTER				√
REPLACE SPARK PLUG				√

1.13 Trowel Gearbox

Check gearbox sight glass for correct oil level daily(every 8 hours). Add oil if oil level is below the bottom third of sight glass.The gearbox oil level should only be checked when the gearbox is in the level position. To add oil, tilt trowel back and remove sight glass. Add oil through sight glass opening. Replace sight glass and check oil level. Do **NOT** fill past the 3/4 full point. Use only Mobil oil SHC 634, ISO Grade 460, Medium SAE 140 weight.

1.14 Drive Belts

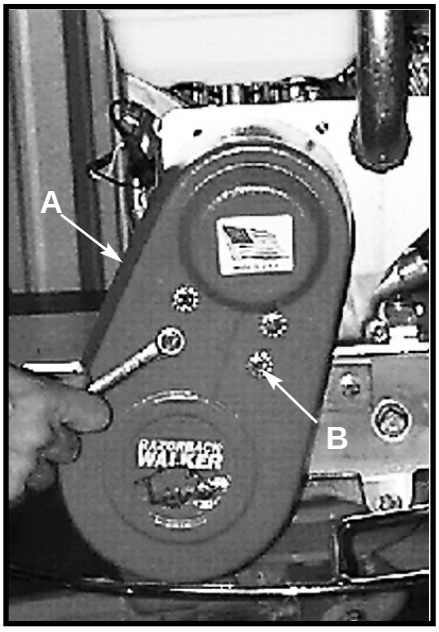


Figure 1

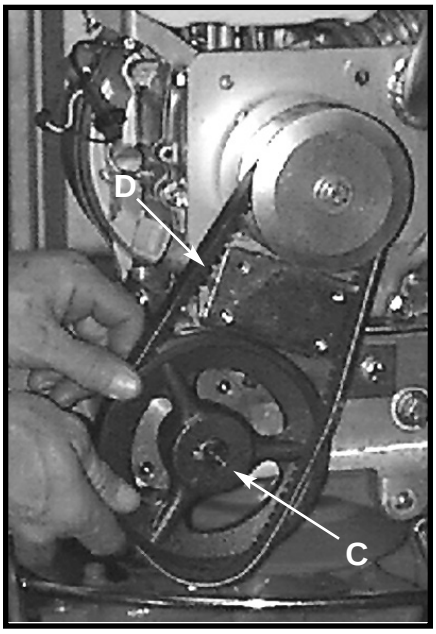


Figure 2

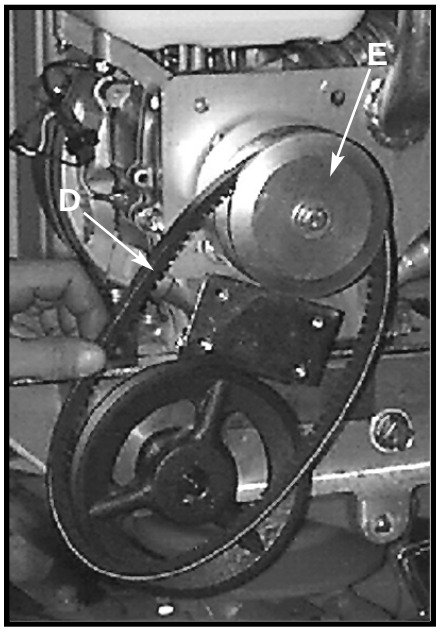


Figure 3

To Replace Belts:

1. Remove belt guard (A) by removing the four belt guard mounting bolts (B). See figure 1.
2. Rotate the pulley (C) while pulling the bottom of the belt (D) out. See figure 2.
3. After the belt (D) has cleared the pulley, remove it from the clutch (E). See figure 3.
4. Repeat steps 1 through 3 in reverse order to install the new belt.

NOTE: When replacing the belt be sure that the pulley and the clutch are in perfect alignment. If the belt is allowed to lean to the left or the right it will cause the clutch to engage prematurely on start-up.

1.15 Compensating for Bent Trowel Arms

1. Loosen nut (B) slightly.
2. Adjust bolt (A) until trowel blade is level.
3. Tighten nut.
(See figure 4)

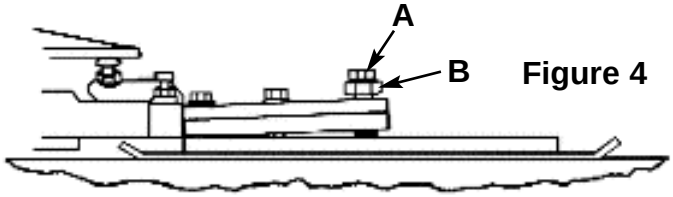
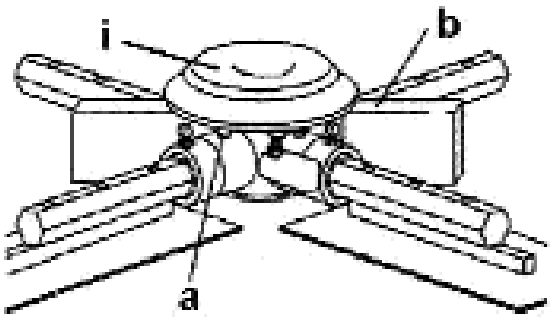


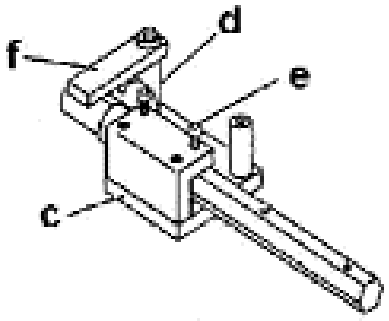
Figure 4

1.16 Lift Lever Adjustment

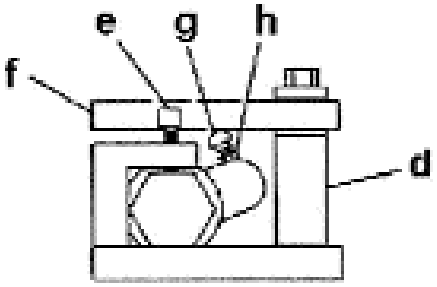
Damage to, or replacement of, a trowel arm can change the adjustment of the lift lever. This can unbalance the trowel arms and cause the trowel to wobble during operation. To operate smoothly, the lift lever on all arms must be adjusted equally. All arms should be adjusted at the same time to ensure that the trowel is balanced correctly. Adjust trowel arms using optional adjusting tool as described below.



1. Block up pressure plate using wooden blocks (b). and have blades without contact.
2. Loosen hex head screws (a) on spider which secures trowel arm in place (do not remove screws).
3. Remove trowel arms from spider with lift levers in place.
4. Remove blade from trowel arms.
5. Clean all flats on trowel arm before placing it in the adjusting tool (c) to make sure it lies flat. Clean thoroughly using a wire brush and scraper.
6. The adjusting tool comes with three different size spacers. Use the shortest spacer (d) when adjusting the 430, 436, 442, & 446. Use the medium spacer when adjusting the 446SD.



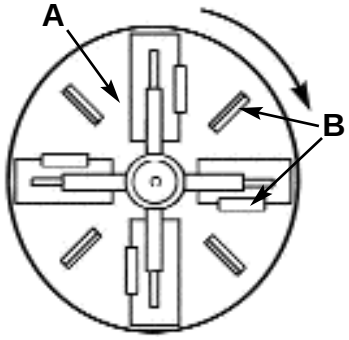
7. Insert trowel arm into adjusting tool as shown.
8. Tighten socket head bolts (e) down on the trowel arm to hold it in place.
9. Move adjusting tool arm (f) over carriage bolts (g)on lift levers shown.
10. Loosen the jam nut (h) and adjust the carriage bolt so that the top of the bolt is just touching and making contact with the bottom of the adjusting tool.



11. Tighten jam nut to secure adjustment in place.
12. Attach blades to arms and trowel arms to spider plate. Tighten hex head screws to secure arm in spider.

1.17 Mounting Floating Disc

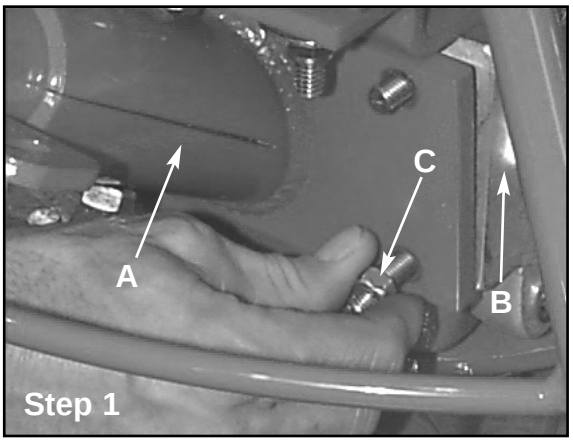
Certain applications may require the use of a floating disc. To mount disc(a), lift trowel off the ground (engine off) and position disc against blades. Turn disc either to the right or the left to engage clip angles (b) as shown. Remember the right hand trowel blades turn counterclockwise the left-hand blades turn clockwise.



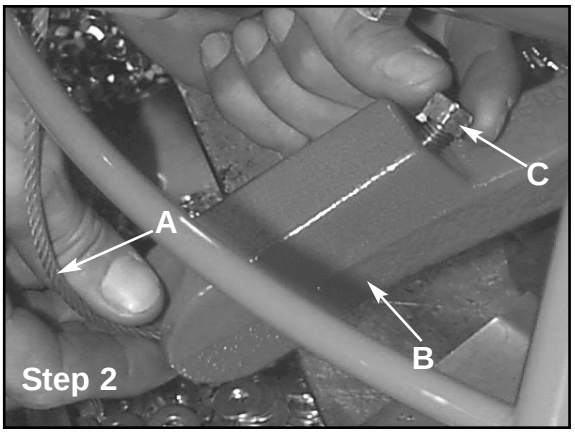
2A ASSEMBLY

ASSEMBLY INSTRUCTIONS

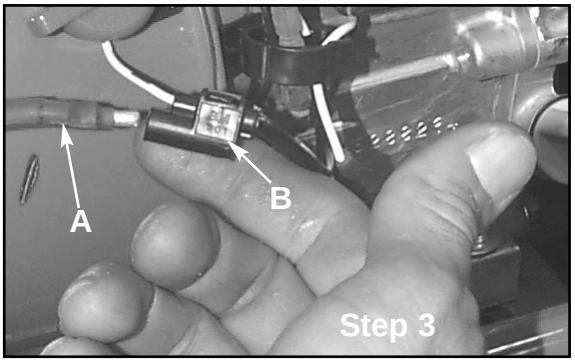
STEP 1: Un-pack the handle assembly(A) and the lower unit from their boxes. Check to make sure no damage was done during shipment. Mount the handle assembly(A) to the gearbox(B) on the lower unit using 4 3/8" nylock nuts(C) that are supplied in a package on the lower unit.



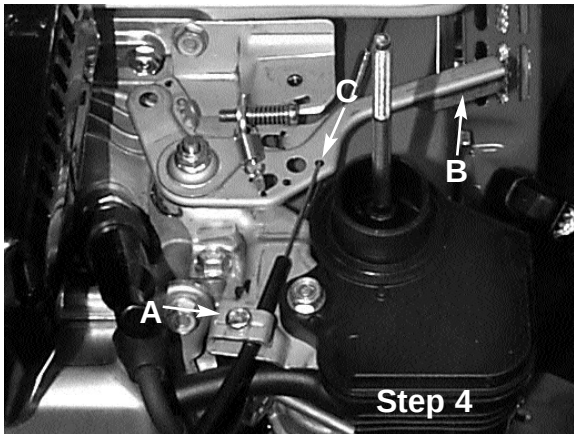
STEP 2: With the handle mounted to the lower unit, attach the pitch control cable(A) through the yoke arm(B) using the remaining 3/8" nylock nut(C). Tighten the nylock nut to where there is approximately a 1/4" of the threads are showing.



STEP 3: Attach the kill wire(A) that is coming from the handle assembly to the engine using the wire splicer(B) that is supplied on the lower unit.



STEP 4: Make sure that the throttle lever on the handle assembly is pushed all the way forward. Remove the breather cap and the breather from the engine. Unscrew the cable adjustment clasp(A). Next, make sure that the throttle lever(B) on the engine is pushed all the way forward. Insert the wire coming out of the cable into the hole(C) shown on the diagram. With everything in place, put the cable adjustment clasp(A) back on and tighten down snug.



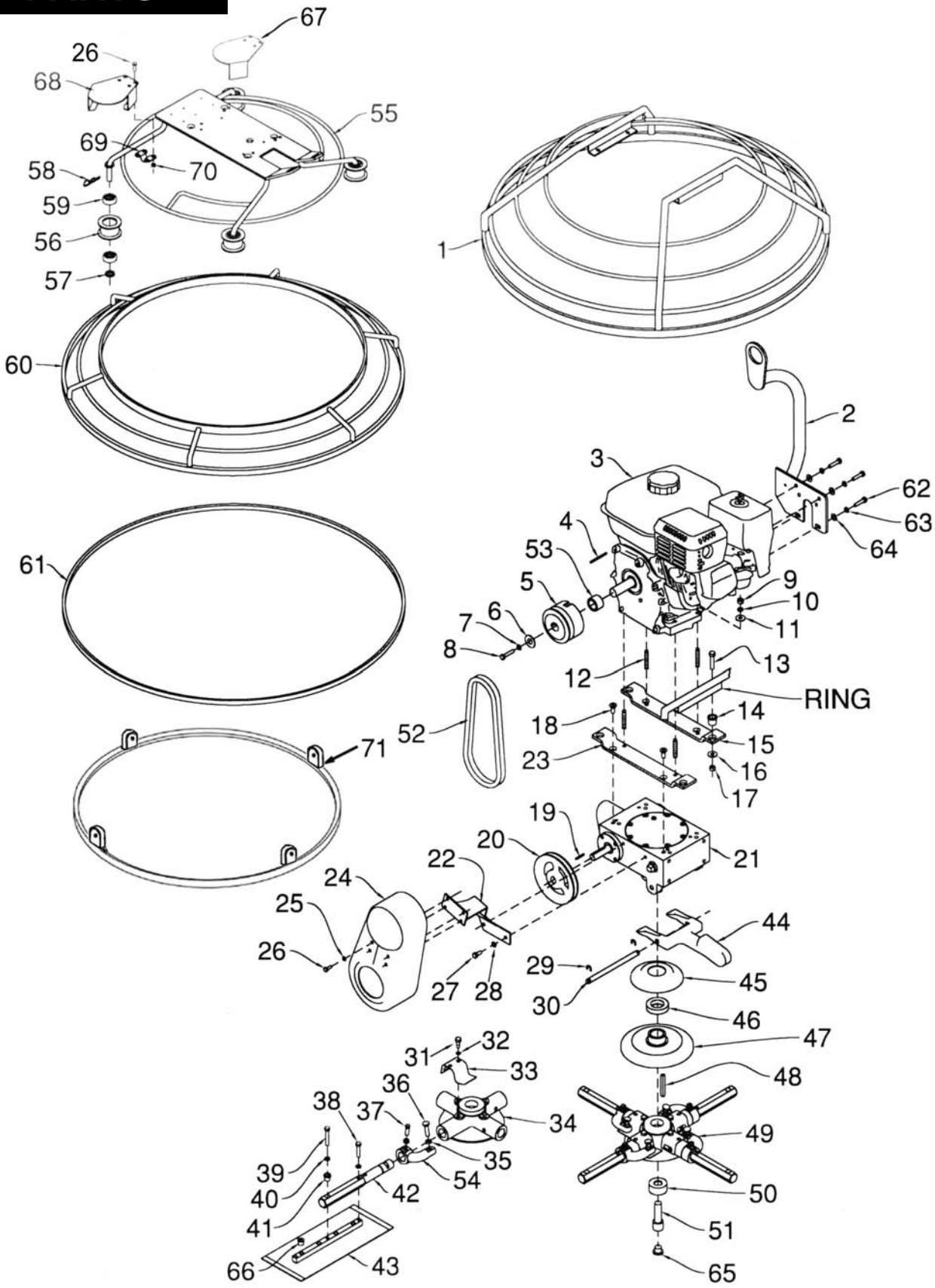
Parts Information

3A PARTS

INFORMATION . . . . . ***PAGE(S)***
Lower End Assembly . . . . . 3A-2 & 3
Handle Assembly 3A-4
Pitch Control Assembly 3A-5
Standard Gearbox Assembly . . . . . 3A-6 & 7
Standard Fan Cooled Gearbox Assembly . . . . . 3A-8 & 9
Kill Switch Assembly 3A-10
Speed Kits (Low & High) 3A-11
Optional Accessories 3A-12

NOTES:

LOWER END ASSEMBLY

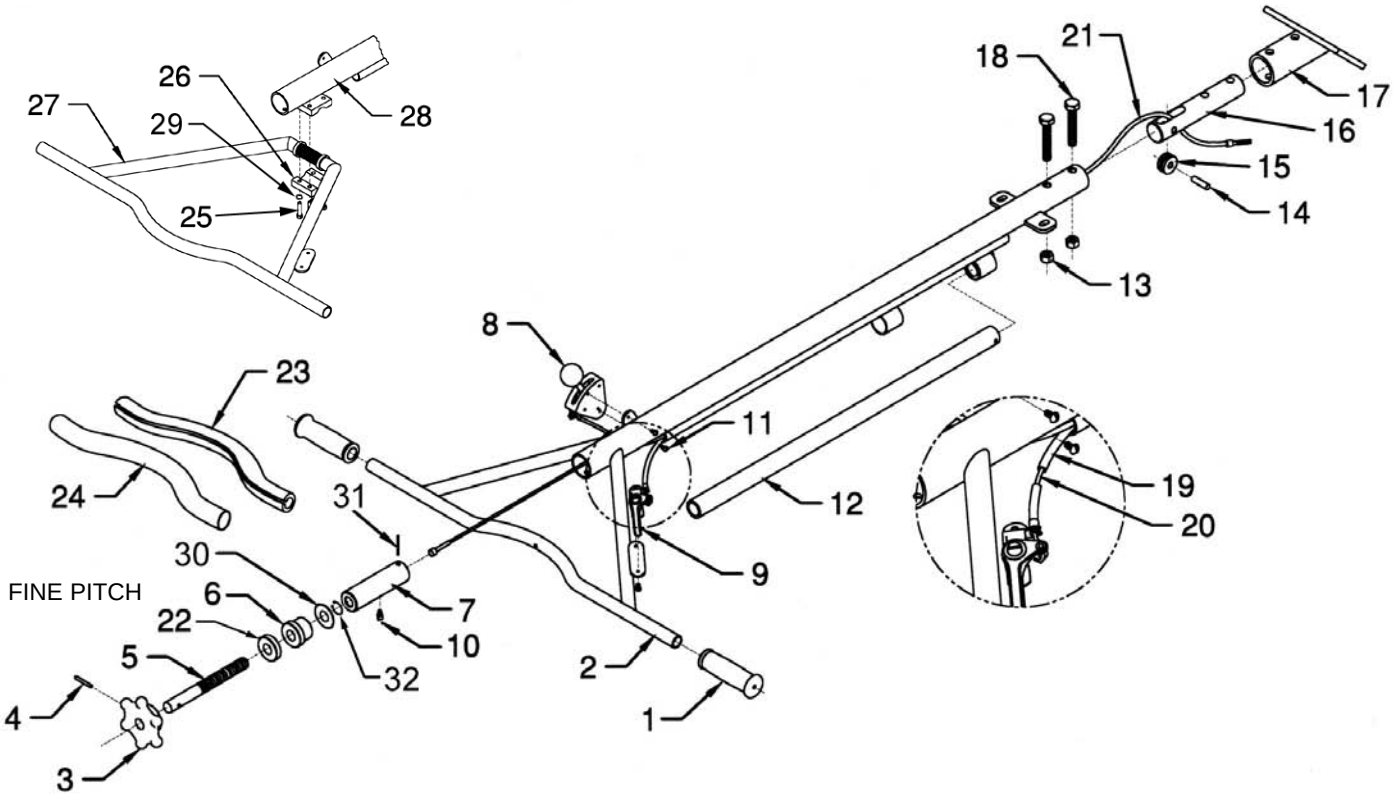


LOWER END ASSEMBLY (cont'd)

ILL.	PART #	DESCRIPTION	QTY.
1	037619	RING, 436	1
	038674	RING, 442	1
	037626	RING, 446	1
2.	221480	LIFTING HOOK	1
3.	018961	ENGINE, 5.5 HO	1
	033395	ENGINE, 5.5 KA	1
	018735	ENGINE, 8 HO	1
	033396	ENGINE, 9 KA	1
	018967	ENGINE, 11 HO	1
	033397	ENGINE, 11 KA	1
	028793	ENGINE, 13 HO	1
4.		KEY SUPPLIED WITH ENGINE	1
5.	016604	CLUTCH, 3/4"	1
	015701	CLUTCH, 1"	1
6.	010083	FLAT WASHER	1
7.	010090	LOCK WASHER	1
8.	022553	BOLT	1
	040970	BOLT (13 HP HONDA)	1
9.	010100	NUT	4
10.	010090	LOCK WASHER	4
11.	010082	FLAT WASHER	4
12.	018012	STUD	4
13.	010039	BOLT	4
14.	037648	RUBBER BUSHING	4
15.	037660	MTR MNT RH 8 HP	1
	037665	MTR MNT RH 11 HP	1
	037656	MTR MNT RH 5 HP	1
	040971	MTR MNT RH 13 HP	1
16.	037675	FLAT WASHER	4
17.	010464	NUT	4
18.	015711	SCREW	4
19.	010273	KEY, 3/16 X 2	1
20.	015707	PULLEY	1
20a	012784	PULLEY (used on 040973 & 040974)	1
21.	015202	GEARBOX	1
	040969	SFC GEARBOX	1
22.	020977	GUARD BRACKET	1
	041260	GUARD BRKT. (13HP)	1
23.	037661	MTR MNT LH 8&11 HP	1
	037659	MTR MNT LH 5 HP	1
	040972	MTR MNT LH 13 HP	1
24.	015987	SMALL GUARD	1
	015703	LARGE GUARD	1
25.	012753	STAR WASHER	4
26.	010002	BOLT	20
27.	010019	BOLT	2
28.	010090	LOCK WASHER	2
29.	015677	E-CLIP	2
30.	015678	YOKE ARM PIN	1
31.	015683	BOLT	4
32.	015682	STAR WASHER	4
33.	016920	TROWEL ARM CLIP	4
34.	015816	4-BOSS	1
35.	015684	NUT	8
36.	012990	BOLT	4
37.	015686	BOLT	4
38.	010022	BOLT	4
39.	010024	BOLT	4
40.	010090	LOCK WASHER	8
41.	015688	INSERT	4
42.	015818	436 TROWEL ARM	4
	034645	442 " "	4
	024794	446 " "	4
	026944	446SD " "	4
43	015890A	BLADE, 436	4
	034421	BLADE, 442	4
	015695	BLADE, 446 & 446SD	4
43a	041696A	EDGER BLADE, 430	4
43b	041695A	EDGER BLADE, 436	4
44.	017264	YOKE ARM	1
45.	015821	PRESSURE CAP	1
46.	015822	THRUST BEARING	1
47.	015824	PRESSURE PLATE	1
48.	015696	KEY, 1/4 X 1-1/4	1
49	032235	430 SPIDER ASS'Y	1
	015893	436 " "	1
	034199	442 " "	1
	024812	446 " "	1
	026588	446SD " "	1
50.	015690	WASHER	1
51.	015691	BOLT	1
52.	041325	BELT, 430, 436,442& 446 SD-SFC	1
	041324	BELT, 446 & 446SD	1
	032701	BELT, (LOW SPEED) 5HP	1
52a	041353	11/13 LO SPEED	1
53	036665	SPACER	1
	039407	SPACER	1
54.	033032	LIFT LEVER	4
	033034	LIFT LEVER	4
55.	037262	UPPER RING (430)	1
	039203	UPPER RING (436)	1
56.	037265	WHEEL HOUSING	4
57.	037422	RETAINING SPACER	4
58.	037269	PIN	4
59.	037267	BEARING	8
60.	037263	LOWER RING (430)	1
	039204	LOWER RING (436)	1
61.	037268	URETHANE BELT(430)96"	1
	039211	URETHANE BELT(436)111"	1
62.	012974	5/16-24 X 3/4 BOLT	4
63.	010090	LOCK WASHER	2
64.	010082	FLAT WASHER	2
65.	015693	PLUG	1
66.	015694	PLUG	4
	015694	PLUG -- (446)	12
67.	041681	COVER, LH (436)	2
	042072	COVER, BC (430)	1
	042073L	COVER, LH (430)	1
68.	042073R	COVER, RH (430)	2
	041683	COVER, RH (436)	2
69.	040860	BRACKET	4
70.	020542	NUT, 1/4" STOVER	16
71.	015805	STAB. RING (446)	1
	028003	STAB. RING (446SD)	1

3A PARTS

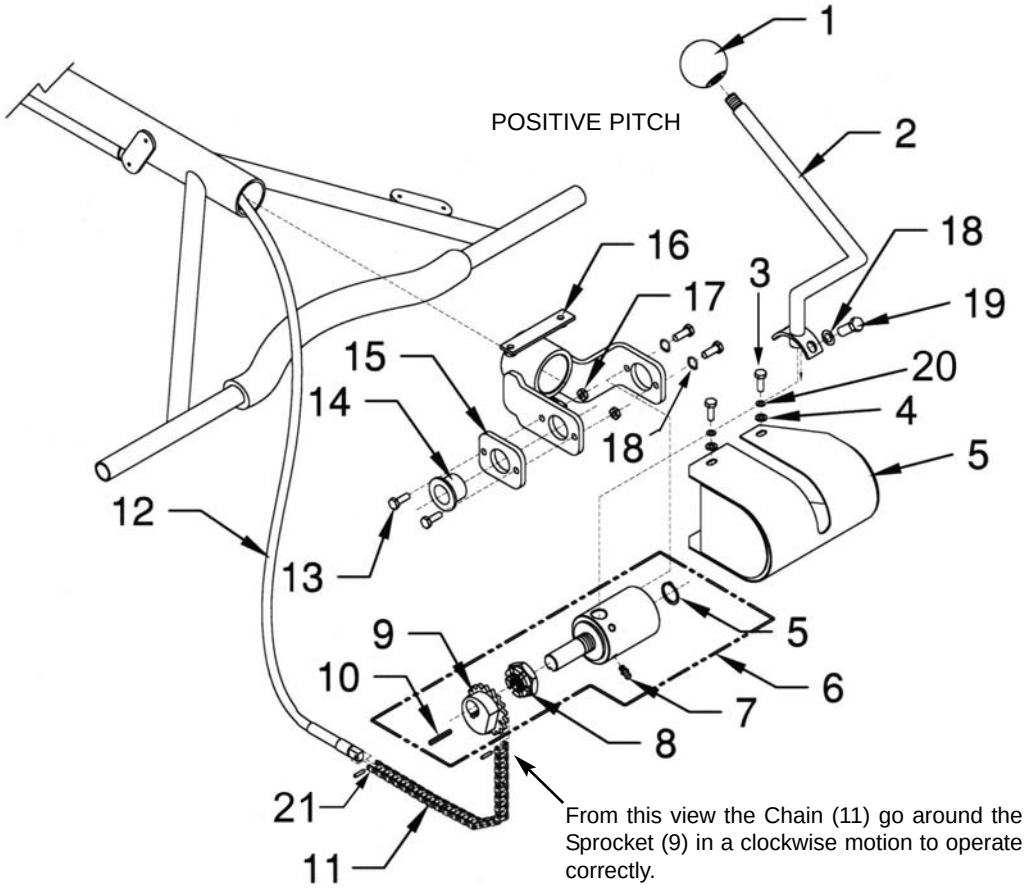
HANDLE ASSEMBLY



ILL.	PART #	DESCRIPTION	QTY.
1.	037668	GRIP	2
2.	015724	HNDL ASSY FINE PITCH LG	1
	015725	HNDL ASSY FINE PITCH ST	1
	028012	HNDL ASSY POS PITCH LG	1
	034449	HNDL ASSY POS PITCH ST	1
	020498	HNDL ST WELD'T F/PT	1
	020499	HNDL LG WELD'T F/PT	1
3.	015739	KNOB. ADJ. HANDLE	1
4.	015740	PIN, SPIRAL 3/16 X 1-3/4	1
5.	015741	SCREW, SHAFT	1
6.	015743	BUSHING	1
7.	015746	BUSHING, SLIDE	1
8.	018409	SWITCH, SAFETY ASSY	1
9.	015736	LEVER, THROTTLE	1
10.	015410	SET SCREW 1/4-20 X 3/8	1
11.	013370	SCREW, 10-32 X 3/8	2
12.	015769	BAR, CARRY	1
13.	011238	NUT, NYLOCK 1/2-13	2
14.	015754	PIN, 3/8 X 1-3/8	1
15.	015753	PULLEY CABLE	1
16.	015752	BLOCK, CABLE SUPPORT	1
17.	034714	BRKT, MTG. F/ SHT HNDL	1
	034201	BRKT, MTG. F/ LNG HNDL	1
18.	010075	FSTN, 1/2-13 X 3 GR. 5	2
19.	015735	THROTTLE CABLE ASSY	1

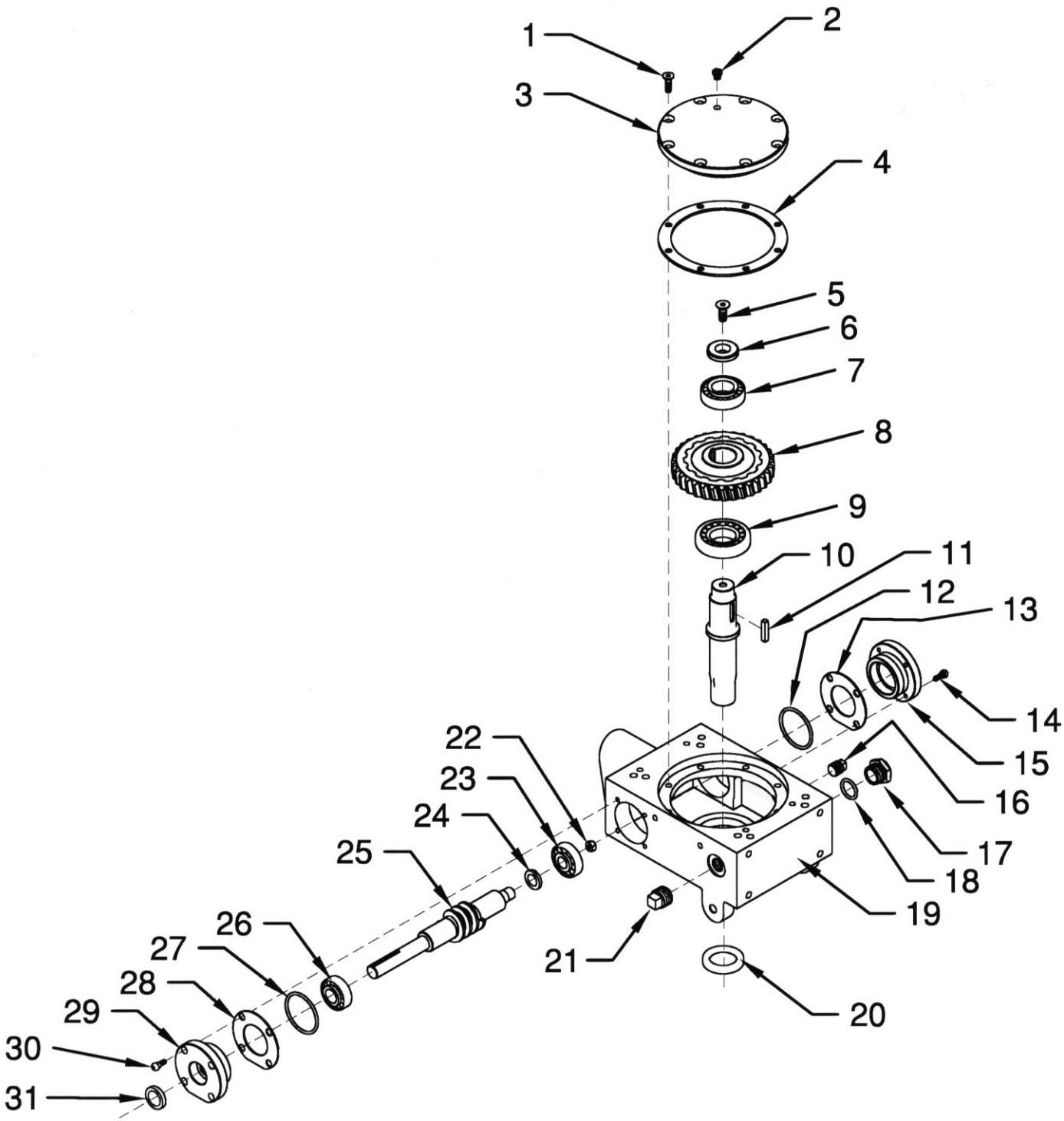
ILL.	PART #	DESCRIPTION	QTY.
21.	016691	CABLE, FINE SHORT	1
	015748	CABLE, FINE LONG	1
21A	027952	CABLE LEVER PITCH ASSY	1
21B.	028013	CABLE 44.25" POSTIVE PITCH SHORT HANDLE	1
22.	015742	BEARING	1
23.	034441	INSULATION F/ HANDLE	1
24.	034440	COVER, F/ HANDLE BAR	1
25.	010004	FSTN, 1/4-20 X 1-1/4	4
26.	034279	BLOCK, ADJ HANDLE	1
27.	034282	HANDLE, ADJUSTABLE	1
28.	034283	HNDL FINE PITCH ADJ (LG)	1
	034284	HNDL FINE PITCH ADJ (SH)	1
	034450	HNDL POS PITCH ADJ (LG)	1
	034451	HNDL POS PITCH ADJ (SH)	1
29.	010089	FSTN, 1/4 LW	4
30.	015744	WASHER	1
31.	015747	ROLL PIN	1
32.	015745	RING, RETAINING	1
33.	034285	EXT. F/ LONG HANDLE	1
	034286	EXT. F/ SHORT HANDLE	1

PITCH CONTROL ASSEMBLY



ILL.	PART #	DESCRIPTION	QTY.
1.	.019427	KNOB, BURLOP PLASTIC 1-7/8	.1
2.	.036448	HANDLE, POSITIVE PITCH	.1
3.	.010002	BOLT, 1/4-20 x 3/4	.3
4.	.010081	FLAT WASHER, 1/4	.3
5.	.027963	COVER, WELD'T LEVER PITCH	.1
6.	.027958	CLUTCH, POS PITCH ASSY	.1
7.	.018510	GREASE FITTING, 1/4-28 x 45°	.1
8.	.032346	NUT, 3/8 FLEX LOCK PLAIN	.1
9.	.027946	SPROCKET, LEVER PITCH	.1
10.	.015813	KEY, 3/16 x 1	.1
11.	.028033	CHAIN, #35 R/V	.13.25 in
12.	.028013	CABLE, POS PITCH CONTROL (SHORT)	.1
	.027952	CABLE, POS PITCH CONTROL (LONG)	.1
13.	.010019	BOLT, 5/16-18 x 3/4 GR. 5	.2
14.	.024630	BUSHING, FLANGE	.1
15.	.027948	BUSHING, SUPPORT BRACKET	.1
16.	.027961	BRKT, LEVER PITCH CLUTCH	.1
17.	.010100	NUT, HEX 5/16-18	.2
18.	.010090	LOCKWASHER, 5/16	.4
19.	.010018	BOLT, 5/16-18 x 1/2 GR. 5	.2
20.	.010081	FSTN, 1/4 LW	.3
21.	.028035	LINK, MASTER (BOTH ENDS)	.2

GEARBOX ASSEMBLY

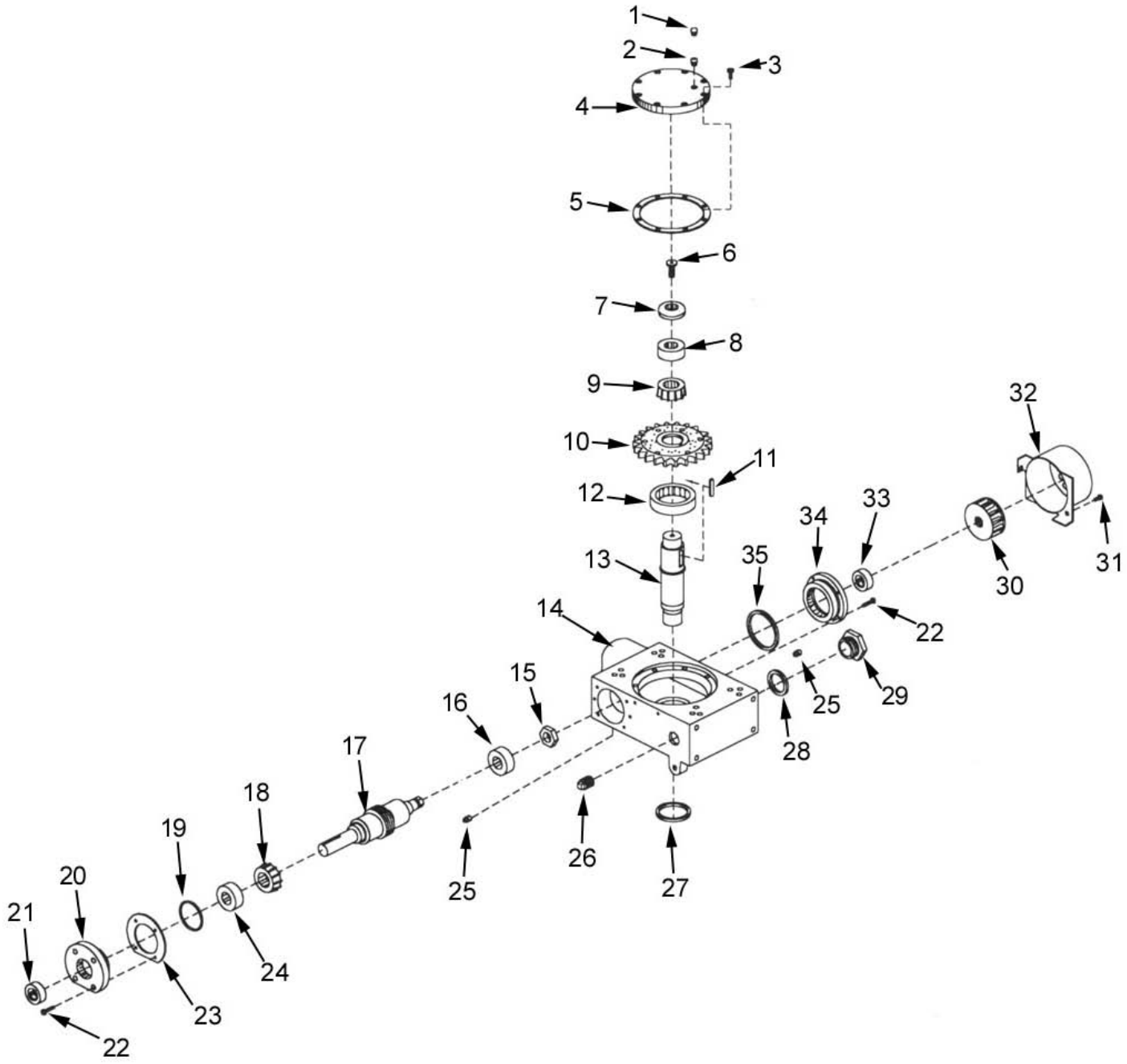


GEARBOX ASSEMBLY (cont'd)

ILL.	PART #	DESCRIPTION	QTY.
1.	015205	SCREW, 5/16-18 x 1	8
2.	015209	VALVE, 1/8 NPT-27 RELIEF	1
3.	015208	COVER, GEARBOX MACHINED	1
4.	032772	SHIM, (.002)	AS REQ.
	020018	SHIM, (.003)	AS REQ.
	015210	SHIM, (.005)	AS REQ.
5.	015212	SCREW, 3/8-16 x 1 (LH)	1
6.	015213	WASHER, PRESSURE	1
7.	022073	BEARING, TAPERED ROLLER	1
	022074	BEARING RACE	1
8.	015216	GEAR, BRONZE (RH)	1
9.	015217	BEARING, RADIAL BALL	1
10.	015219	SHAFT, MAIN MACH. FINISHED	1
11.	015696	KEY, 1/4 x 1-1/4 HARDENED	1
12.	015660	O-RING, GEARBOX END CAPS	1
13.	015222	SHIM, (.005)	AS REQ.
	015186	SHIM, (.003)	AS REQ.
14.	017314	BOLT, 1/4-20 x 5/8	4
15.	015221	CAP, GEARBOX END (4-HOLE)	1
16.	010498	PLUG, 3/8 NPT BI SQUARE HD PIPE	1
17.	015672	SIGHTGLASS, 3/4-14 NPT	1
18.	015673	O-RING	1
19.	015204	GEARBOX, MACHINE FINISHED	1
20.	015671	SEAL, OIL CR# 13650	1
21.	012953	PLUG, 3/4 NPT BI SQUARE HD PIPE	1
22.	015662	NUT, JAM LH 5/8-18	1
23.	015663	BEARING, ANGULAR CONTACT	1
24.	022025	SPACER, FIBER GEARBOX COUNTERS	1
25.	026740	SHAFT, INPUT RH GEARBOX	1
26.	015668	BEARING, TAPERED ROLLER	1
	015669	BEARING RACE	1
27.	015660	O-RING, GEARBOX ENDCAPS	1
28.	015222	SHIM, (.005)	AS REQ.
	015186	SHIM, (.003)	AS REQ.
29.	015223	FLANGE, GEARBOX (4-HOLE)	1
30.	017314	BOLT, 1/4-20 x 5/8	4
31.	015670	SEAL, OIL SEAL CR# 7443	1

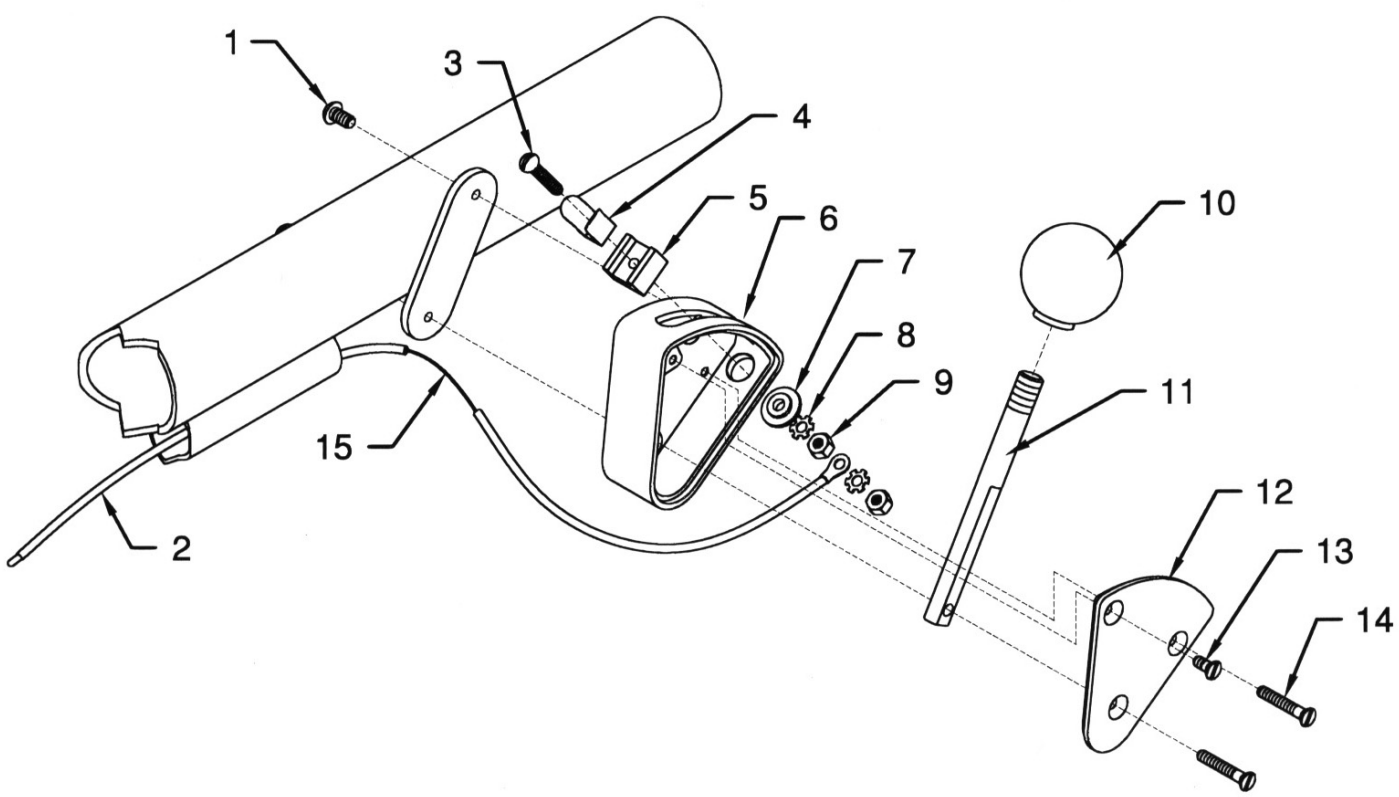
Note: Items 4, 13, and 28 from above are sold only in a kit. *SHIM SET - 029457* This kit consist of (2) 015210, (2) 015222, (2) 020018, and (2) 022186.

SFC GEARBOX ASSEMBLY



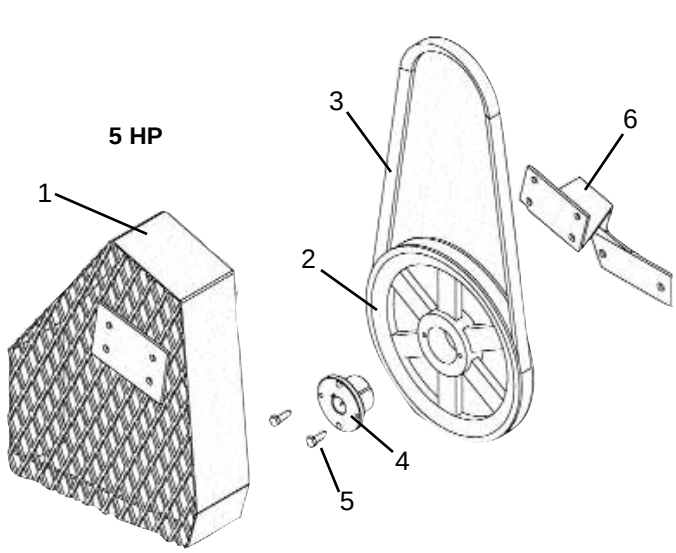
ILL.	PART #	DESCRIPTION	QTY.
1.	032745	PLUG, PLASTIC 1/8-27	1
2.	015209	VALVE, 1/8 NPT-27 RELIEF	1
3.	015205	FSTN, FHSSS 3/8-16 X 1	8
4.	015208	COVER, GEARBOX	1
5.	032772	GASKET, .002	AS REQ.
	020018	GASKET, .003	AS REQ.
	015210	GASKET, .005	AS REQ.
6.	015212	FSTN, FHSSS 3/8-16 X 1 LH	1
7.	015213	PRESSURE WASHER	1
8.	022074	BEARING, RACE	1
9.	022073	BEARING, TAPERED ROLLER	1
10.	015216	GEAR, BRONZE RH	1
11.	015696	KEY, 1/4 x 1-1/4 HARDENED	1
12.	015217	BEARING, RADIAL BALL	1
13.	015219	SHAFT, MAIN DRIVE	1
14.	015204	GEAR BOX MACHINE FINISH	1
15.	015662	FSTN, NUT HEX JAM LH 5/8-18	1
16.	015663	BEARING, ANGULAR CONTACT	1
17.	035593	SHAFT, INPUT RH	1
18.	015668	BEARING, TAPERED ROLLER	1
19.	015660	O-RING, END CAP	1
20.	015223	CAP, GEARBOX FLANGE (4-HOLE)	1
21.	015670	SEAL, OIL CR# 7443	1
22.	017314	FSTN, SCHS 1/4-20 X 5/8	8
23.	022185	GASKET, .002	AS REQ.
	022186	GASKET, .003	AS REQ.
	015222	GASKET, .005	AS REQ.
24.	015669	BEARING, RACE	1
25.	010498	PLUG, 3/8 NPT BI SQ HD PIPE	2
26.	012953	PLUG, 3/4 NPT BI SQ HD PIPE	1
27.	015671	SEAL, OIL CR# 13650	1
28.	015673	O-RING	1
29.	015672	SIGHTGLASS, 3/4-14 NPT	1
30.	035592	FAN, CW ROTATION	1
31.	037484	FSTN, SCREW 10-32 X 3/8	2
32.	035633L	SHROUD, FAN	1
33.	035315	SEAL, OIL	1
34.	035590	FLANGE, GEARBOX FAN SIDE	1
35.	015660	O-RING, END CAP	1

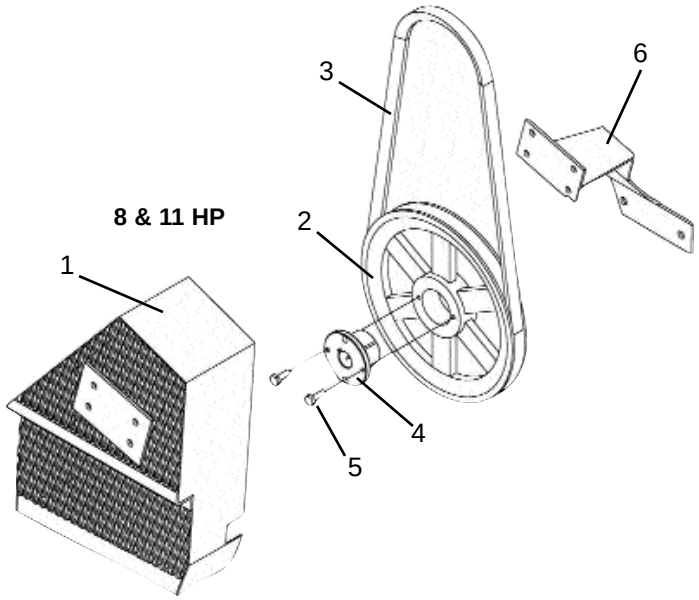
KILL SWITCH ASSEMBLY



ILL.	PART #	DESCRIPTION	QTY.
1.	013370	SCREW, 10-32 x 3/8 SLOTTED	2
2.	018512	CONDUIT, RD PVC 1/4” SMOOTH	6.6 ft.
3.	018624	SCREW, SLT 8-32 x 1	1
4.	018267	CLIP, CONTACT PT SAFETY SWITCH	1
5.	018407	BLOCK, CONTACT F/ PT SAFETY SWITCH	1
6.	018324	HOUSING, SAFETY SWITCH MF	1
7.	018264	INSULATOR, RUBBER SAFETY SWITCH	1
8.	013704	LOCK WASHER, EXT STAR 8-32	2
9.	018406	NUT BRASS, HEX 8-32	2
10.	034072	KNOB, SAFETY SWITCH F/ WALKER	1
11.	034316	LEVER, SAFETY SWITCH F/ PT	1
12.	018326	COVER, SAFETY SWITCH	1
13.	018623	SCREW, BRASS 8-32 x 3/8	1
14.	018404	SCREW, SLT BRASS 8-32 x 1	1
15.	013270	WIRE, RED 14 GA. ELECT.	7.1 ft.

LOW SPEED KITS

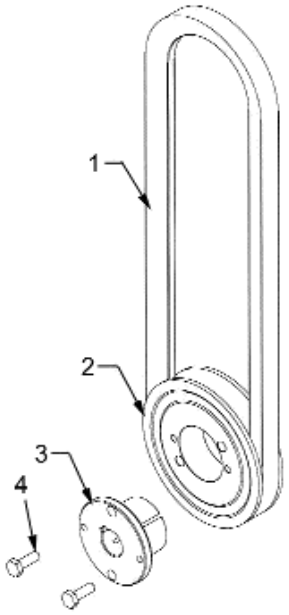




ILL.	PART #	DESCRIPTION	QTY.
1.	027242	BELT GUARD (8 & 11 HP)	1
	032696	BELT GUARD (5 HP)	1
2.	029102	PULLEY, BK90	1
3.	041353	V-BELT, #6937 (8 & 11 HP)	1
	032701	V-BELT, B32 (5 HP)	1
4.	012387	H-BUSHING, 3/4" BORE	1
5.		BOLT (COMES W/ H-BUSHING)	2
6.	032697	BRKT, BELT GUARD (5HP)	1
	032693	BRKT, BELT GUARD (8 & 11HP)	1
KIT	027239	EPOXY KIT FOR 8 & 11 HP STD	1
KIT	032702	EPOXY KIT FOR 5 HP	1
	042676	EPOXY KIT FOR 11/13 SD	1

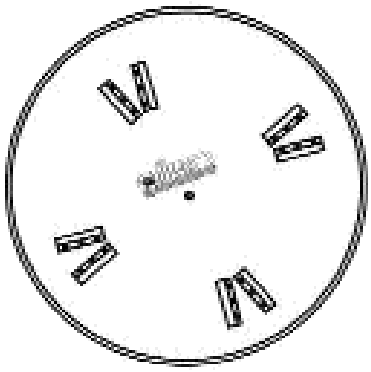
HIGH SPEED KIT

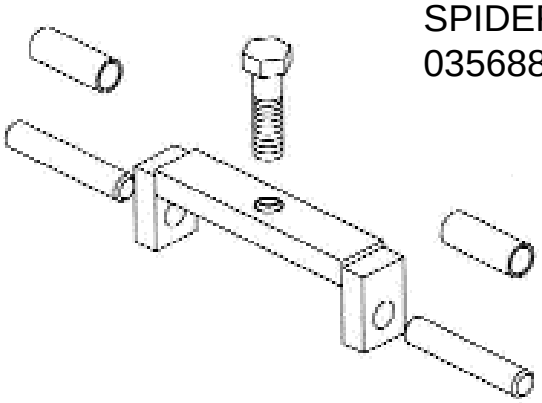
ILL.	PART #	DESCRIPTION	QTY.
1.	041325	V-BELT #6929	1
2.	012784	PULLEY, BK45H	1
3.	012387	H-BUSHING 3/4"	1
4.		BOLT (COMES WITH H BUSHING)	2
KIT	022942	HIGH SPEED	1



OPTIONAL ACCESSORIES

037248 -- 430 EDGER PAN
026910 -- 436 PAN
039218 -- 436 EDGER PAN
033997 -- 442 PAN





SPIDER PULLER
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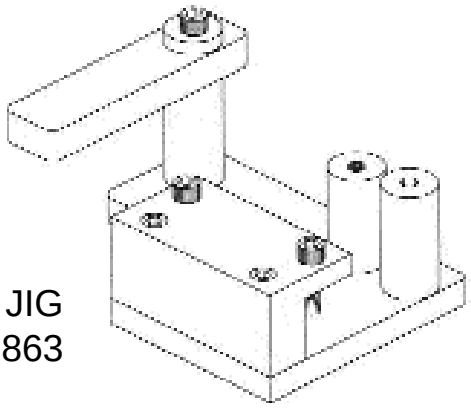

ALIGNMENT JIG
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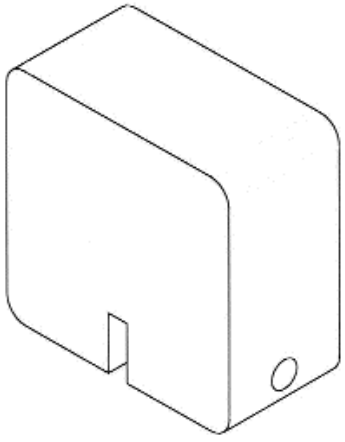

10 POUND WEIGHT
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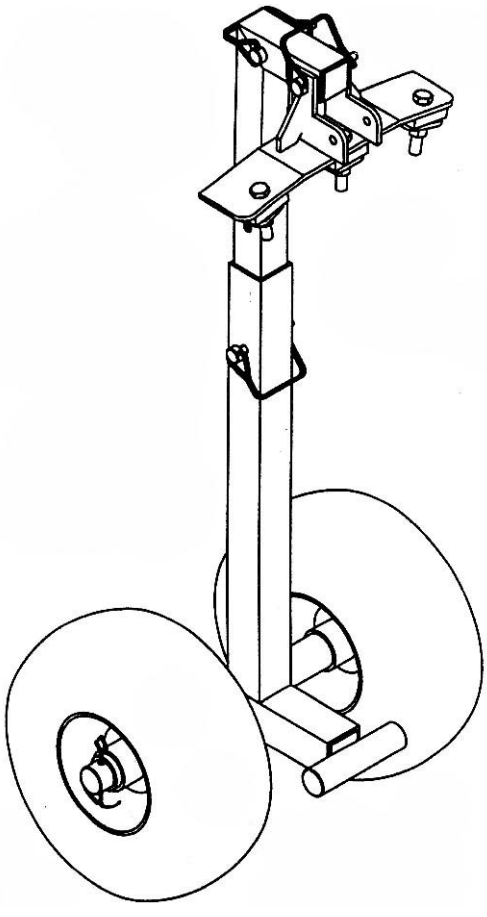

ROLLING TRANSPORT SYSTEM
040349